AMENDMENTS TO THE SPECIFICATION:

Please amend the paragraph beginning at page 3, line 20, and continuing to page 3, line 23, as follows:

~~The present invention has been made in light of the above-mentioned problems. An object thereof~~ A feature of the present technology is to provide a photoelectric conversion device which can be produced by a simple production process, and a manufacturing method therefore

Please amend the caption on page 3, line 25, as follows:

~~DISCLOSURE OF THE INVENTION~~BRIEF SUMMARY

Please amend the paragraphs beginning at page 4, line 1, and continuing to page 5, line 4, as follows:

~~According to the invention, provided is a~~A photoelectric conversion device ~~using~~ uses a first conductivity type semiconductor substrate having convex and concave portions formed on its surface~~, t~~. The device ~~being characterized in that it~~ comprises at least~~,~~ a second conductivity type semiconductor layer formed on the surface of the first conductivity type semiconductor substrate, a front electrode connected to the second conductivity type semiconductor layer, and a rear electrode formed on the rear surface of the first conductivity type semiconductor substrate, the second conductivity type semiconductor layer being in contact with the front electrode at its partial area and becoming thinner as it goes farther from the contacted area.

~~According to the invention, provided is a~~A method for manufacturing a photoelectric conversion device comprises~~ing~~ the ~~steps~~ acts of (a) ~~of~~ forming a film serving as a barrier against impurity diffusion on a semiconductor substrate having convex and concave portions formed on its surface in such a manner that the film

becomes thicker from the convex portion to the concave portion, and the ~~steps~~ acts of (b) ~~of~~ implanting second conductivity type impurities into the semiconductor substrate through the film to form a second conductivity type semiconductor layer on the surface of the semiconductor substrate.

~~According to the invention, provided is a~~A method for manufacturing a photoelectric conversion device comprises~~ing~~ the ~~steps~~ acts of (a') ~~of~~ forming a film containing second conductivity type impurities on a semiconductor substrate having convex and concave portions formed on its surface in such a manner that the film becomes thicker from the convex portion to the concave portion, and ~~steps~~ acts of (b') ~~of~~ implanting second conductivity type impurities into the semiconductor substrate from the film to form a second conductivity type semiconductor layer on the surface of the semiconductor substrate.

Please amend the paragraph beginning at page 5, line 7, and continuing to page 5, line 8, as follows:

Fig. 1 is a perspective view schematically illustrating a photoelectric conversion device ~~of the invention~~according to an exemplary embodiment.

Please amend the paragraph(s) beginning at page 5, line 13, and continuing to page 5, line 18, as follows:

Fig. 5 is a perspective view schematically illustrating still another photoelectric conversion device ~~of the invention~~according to an exemplary embodiment.

Fig. 6 is a perspective view schematically illustrating yet another photoelectric conversion device ~~of the invention~~according to an exemplary embodiment.

Please amend the captioned on page 6, line 1, as follows:

~~BEST MODES FOR CARRYING OUT THE INVENTION~~DETAILED DESCRIPTION

Please amend the paragraph beginning at page 6, line 2, and continuing to page 6, line 9, as follows:

The photoelectric conversion device ~~of the present invention~~ of the technology uses a first conductivity type semiconductor substrate having convex and concave portions formed on its surface, and comprises a second conductivity type semiconductor layer formed on the surface of the first conductivity type semiconductor substrate, a front electrode connected to the second conductivity type semiconductor layer, and a rear electrode formed on the rear surface of the first conductivity type semiconductor substrate.

Please amend the paragraph beginning at page 9, line 10, and continuing to page 10, line 7, as follows:

In the case where the photoelectric conversion device ~~of the present invention~~ has the second conductivity type semiconductor layer that is thick at convex portions thereof and thin at concave portions thereof, the second conductivity type semiconductor layer becomes thinner as it goes farther from the under mentioned area where the layer and the front electrodes contact each other. In other words, it is preferred that the thickness of the second conductivity type semiconductor layer becomes thinner from the convex portions to the concave portions of the semiconductor substrate. In the semiconductor substrate in which grooves are continuously made, it is preferred that the thickness of the second conductivity type semiconductor layer is largest at the top of the convex portions in stripe form which are provided between the respective grooves and becomes evenly thinner from the top of the convex portions to the bottom of the grooves. In the semiconductor substrate in which the convex portions are arranged at regular intervals or in a lattice

form, it is preferred that the thickness of the second conductivity type semiconductor layer is largest only at the top of the convex portions and becomes thinner almost radially from the top of the convex portions to the concave portions. The pitch of the convex portions and the pitch of the concave portions are not particularly limited and are, for example, about 1 to 3 mm in view of considering the width of the front electrodes. The difference of the elevation between the convex and concave portions is not particularly limited, and is, for example, about 0.05 to 0.1 mm.

Please amend the paragraph beginning at page 11, line 11, and continuing to page 11, line 16, as follows:

According to a first embodiment of the manufacturing method of a photoelectric conversion device~~ of the invention~~, a film serving as a barrier against impurity diffusion is first formed in step (a), on a first conductivity type semiconductor substrate having convex and concave portions on a surface thereof, so that the film becomes thicker from the convex portion to the concave portion.

Please amend the paragraph beginning at page 13, line 20, and continuing to page 14, line 8, as follows:

~~According to the present invention, i~~It is preferred in an exemplary embodiment to form the front electrode which contact with the second conductivity type semiconductor layer at the convex portion of the surface of the resultant semiconductor substrate in step (c). The method for forming the front electrode is not particularly limited, and examples thereof include vapor deposition, CVD, EB, and printing/firing processes. The printing/firing process is particularly preferable because it uses a conductive paste to print and burn the front electrodes so as to extend over the top of the convex portions, thereby to simply and surely allow the front electrodes penetrate through the antireflection layer and contact the second conductivity type semiconductor layer in the vicinity of the top of

the convex portions where the thickness of the coating film is small. Conditions for the printing/firing process can be appropriately set by combining materials and conditions known in the art.

Please amend the paragraphs beginning at page 15, line 6, and continuing to page 16, line 5, as follows:

In the manufacturing method of the photoelectric conversion device of ~~the present invention~~an exemplary embodiment, the formation of the rear electric field layer, the rear electrode, the antireflection layer, and a protective layer may be further performed by a method known in the art to complete a photoelectric conversion device. The rear electric field layer prevents minority carriers that reached the rear surface from being recombined in the rear electrode, contributing to a rise in the efficiency. Any material and method usually used in the art that can realize this contribution may be used to form the rear electric field layer.

In the case where the photoelectric conversion device of ~~the present invention~~an exemplary embodiment has a second conductivity type semiconductor layer that is thin at convex portions thereof and thick at concave portions thereof, the semiconductor substrate has convex and concave portions formed on a surface thereof, as described above. It is particularly preferred that the convex portions are formed linearly at regular intervals since the second conductivity type semiconductor layer can be formed thin at portions other than the vicinity of the bottoms of the concave portions which become contacted areas with the front electrodes, so that the second conductivity type semiconductor layer can be formed into a thinner film on average, as will be described below. The pitch of the convex portions and the pitch of the concave are not particularly limited, and are, for example, about 1 to 3 mm in view of the width of front electrodes which will be described later. The difference of the elevation between the concave and convex portions is not particularly limited, and is, for example, about 0.05 to 0.1 mm.

Please amend the paragraph beginning at page 16, line 21, and continuing to page 17, line 9, as follows:

According to the second embodiment of the manufacturing method of a photoelectric conversion device ~~of the present invention~~, a film containing second conductivity type impurities is formed in step (a'), on a first conductivity type semiconductor substrate having convex and concave portions on a surface thereof so that the film becomes thicker from the convex portion to the concave portion. The film may be formed either by applying an appropriate coating solution for forming this film on the semiconductor substrate by spin coating, dip coating, spray coating or some other coating, and then drying the applied solution. In the case where the coating solution is applied onto the substrate surface having the convex and concave portions by spin coating, the solution remains easily in the concave portions. Therefore, the coating film can easily be formed so as to become continuously or gradually thicker from the convex portions to the concave portions of the semiconductor substrate.

Please amend the paragraph beginning at page 18, line 11, and continuing to page 18, line 25, as follows:

~~According to the present invention, i~~It is preferred in an exemplary embodiment to form a front electrode which linearly contact the second conductivity type semiconductor layer at the concave portion of the surface of the resultant semiconductor substrate in step (c'). The method for forming the front electrode is not particularly limited, and examples thereof include vapor deposition, CVD, EB, and printing/firing processes. The printing/firing process is particularly preferable because it use a conductive paste to print and burn the front electrodes so as to extend over the bottom of the concave portions, thereby to simply and surely allow the front electrodes penetrate through the antireflection layer in the bottoms of the concave portions of the second conductivity type semiconductor layer, wherein the film thickness is large, so as to contact the second

conductivity type semiconductor layer. Conditions for the printing/firing process can be appropriately set by combining materials and conditions known in the art.

Please amend the paragraph beginning at page 19, line 5, and continuing to page 19, line 8, as follows:

The photoelectric conversion device of ~~the present invention~~an exemplary embodiment and its manufacturing method are described in more detail by way of the following examples with reference to the attached drawings.

Please amend the paragraph beginning at page 23, line 14, and continuing to page 23, line 16, as follows:

The average sheet resistance of the N type semiconductor layer is 120 Ω/□ in the working example according to ~~the invention~~an exemplary embodiment and 90 Ω/□ in the comparative example.

Please amend the paragraph beginning at page 29, line 7, and continuing to page 29, line 15, as follows:

According to the manufacturing method of the photoelectric conversion device of the ~~present invention~~ exemplary embodiment presented herein, simple steps such as a coating-film formation step and an impurity introduction step are performed. This allows a second conductivity type semiconductor layer having a desired film thickness gradient to be produced with reliability, without performing cost-consuming and troublesome laser step such as laser-processing, photolithography, and multiple diffusion step. It is therefore possible to reduce the manufacturing costs and further improve the yield.